

## SOLAR CENTRAL WATER HEATER

### SPECIFICATION

Solar Central Water Heater forced system shall be as detailed below:

1. The capacity hot water consumption need for the building shall be calculated and approved by consultant engineer.
2. The Solar Central Water Heater forced system consist of;
  - a. NovaSun Solar Collectors.
  - b. NovaSun Storage Tank.
  - c. Hydraulic Kits (including wilo Pump set).
  - d. Differential Thermostat.
  - e. Pressure reducing valve
  - f. Collector support base.
  - g. Expansion Vessel.
  - h. Master control Panel for tank, solar collector, pump and Electrical element.
  - i. Pipes for tank heat exchanger and solar panel.
  - j. Thermal liquid
  - k. Accessories
  - l. Find below the specification details for each:
    - m. • **NOVASUN SOLAR COLLECTORS:**
    - n. The production process and raw materials are used to produce NOVASUN Solar Collectors, Able to absorbed high thermal energy efficiency even during periods with insufficient radiation.
    - Frame made from anodized aluminum which is extremely durable to adverse climatic conditions. (High humidity-coastal areas).
    - Back isolation 40mm rock wool side, isolation 20mm glass wool.
    - Solar tempered glass covers the collectors made of special prismatic glass resistant to hale and helping of heat absorbing, thickness 4.0mm.
    - Absorber made of copper treated with **blue color titanium selective coating**.
    - Net copper tubes: Diameter of horizontal tubes 22mm
      - o. Diameter of vertical tubes 10mm
      - p. Test pressure.....10 bar
      - q. Max. Functional pressure..... 07 bar
    - Water tightness: joints EPDM and transparent silicon.
    - Total Thermal Efficiency : 95% ± 2%
    - Total Thermal Losses: 5% ± 3%
    - Thermal liquid: Glycol appropriate for Solar System
    - r.
    - s.
    - t.
    - u.
    - v.

- **NOVASUN STORAGE TANK :**

- w. NovaSun Storage Tank manufactured according to European standards in the following specification.
  - Material: Steel Plate USD 37.2
  - Welding: with robot in an inert gas environment.
  - Cleaning: Sand blasting
  - Internal coating: Double direct enameling baked @ 850 °C (glass lined).
  - Water tightness: Double checked before and after enameling or galvanization
  - Pressure Max. Of function: 10 bar
  - Pressure of Test: 10 bar
  - Temp. Of functioning: +95°C
  - Isolation: Polyurethane without CFC and FCKW density: 40kg. /M<sup>3</sup> thickness: 65mm.
  - External covering: Metal Covering
- x. NovaSun Storage Tank contains:
  1. One Heat exchanger
  2. Magnesium Rod DN 32mm for additional anti corrosion protection.
  3. Side flange ND115 for easy cleaning and maintenance.
  4. Top flange DN110mm for easy replacement of Magnesium Rod.
- y.

- **HYDRAULIC KIT(Solar Station) :**

1. Circulations pump set Single (WILO Germany) using for circulation thermal fluid from collectors to heat exchanger in NovaSun Boiler.
2. Balancing Valve.
3. Venting tank with bleeder valve.
4. Bleeder valve
5. Pressure gage
6. Thermometer
7. Stop ball valve with safety valve
8. Stop ball valve with fill and drain cock and integrated check valve.
9. Safety Valve
10. Connector ADG for the expansion vessel
11. Wall fixing
- z. Hydraulic kit as pump regulator and air venting valve in solar heating systems. The main purpose for the hydraulic kit allows the required quantity of fluid in the primary circuit to be exactly and simply set and checked. The continues venting system meets the most demanding requirements and keeps the systems free of air which guarantee optimal energy extraction and energy saving.
- aa.

- **Master Control Panel with Differential Thermostat :**

- ab. The programmable electronic thermostat secures the smooth transfer of thermal energy from solar collectors to the boiler via an electronic command to the circulator of the solar system.
- ac.

- **Expansion Vessel:**

ad. ( 100L) for 3,000L Tank Capacity, (75L) for 2,000L Tank Capacity, (50L) for 1,500L Tank Capacity, (35L) for 1,000L Tank Capacity and (35L) for less than 1,000L Tank Capacity is connected to the hydraulic kit with SS flexible tube.

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- **Thermal Liquid:**

af. Glycol using as thermal fluid running in circulation collectors and NovaSun Boiler heat exchanger.

ag. It is working as antifreeze anti Vapor and maintain for the durability for copper pipes as anti corrosion supportive factor.

ah.

- **Accessories:**

- a. Screw, bolts, nut, moly plugs
- b. Bronze cross
- c. Connection accords of collectors and plugs
- d. Flexible tube for the expansion pot.
- e. Sensor- socket
- f. Degasser of the collectors

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- **Piping between Solar Panels & Tank Heat Exchanger:**

aj. All Piping installation between Novasun Solar Panels & Tank Heat Exchanger will be ALPEX piping with Isolation.

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al. • **Other Component in Novasun Solar System:**

am.-All NovaSun Boilers should be install electric resistance from 2 kW upon the boiler capacity. The electric resistance made of copper DN 40 (1 ½) provided with thermostat and plastic cover and control. It is works as a backup source secures the availability of hot water in case of low sunshine.

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ao. • **NovaSun Central Water Heater System Guarantee:**

- **5** Years for Novasun solar water heating system(Tank & Panels).
- **2** years for the electrical element Backup.

ap.

aq.

ar.

as.

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